



Dewberry



PINNACLE
MAPPING TECHNOLOGIES, INC.



LOS ANGELES REGION
LAR|QC
imagery acquisition consortium



**Independent QA/QC
Contract**

Wrap-up Briefing

April 19, 2007

Presented by: Phil Worrall, GIS Director
Pinnacle Mapping Technologies, Indianapolis, IN



LOS ANGELES REGION
LAR|QC
imagery acquisition consortium



Independent QA/QC Contract

Briefing Topics

- Final Product QA/QC Statistics
- Final Product Deliver Status
- MrSID & ECW Mosaics
- Lessons Learned
- Helpful Hints
- Q&A

Orthophotos

12,076 4-inch Tiles - 4,191 selected (34%)
for QA/QC - 126 had issues (3%)

Ortho Status Layers

Four Inch Grid Layers

Ortho Tile/Area Status

QC Status-Dewberry/Pinnacle

One Foot Grid Layers

Ortho Status

QC Status-Dewberry/Pinnacle

[Status Report](#)

[HELP](#)

4x 3x 2x 2x 3x 4x

0 6 16 mi

Los Angeles County Status Map (ver. 1.0)

Scale: 1055231

Base Layers

- Urban
- Forest
- Catalina

[Home](#)

Contours

13,982 contour files QC'd

3,765 tiles with issues (27%)

Contour Status Layers

Four Inch Grid Layers

Contour Tile/Area Status

QC Status - Pinnacle

One Foot Grid Layers

Contour Status

QC Status - Pinnacle

→

[Status Report](#)

[HELP](#)

4x 3x 2x 2x 3x 4x

Delivery_24 Delivery_23 Delivery_22 Delivery_21

Delivery_20 Delivery_19

Block_1

Delivery_18 Delivery_17

Delivery_16

Delivery_15

Block_2

Delivery_14

Delivery_13

Delivery_12

Delivery_11

Delivery_10

Delivery_9

Delivery_8

Delivery_7

Delivery_6

Delivery_5

Delivery_4

Delivery_3

Delivery_2

Delivery_1

0 8 16 mi

Los Angeles County Status Map (ver. 1.0)

Dewberry

Pinnacle Mapping Technologies, Inc.

Scale: 1055231

Base Layers

Urban

Forest

Catalina

[Home](#)

Legend

- Not Recieved
- Received By Dewberry
- Returned To InfoTech
- Received By Pinnacle
- Finalized on Server
- Missing
- Accepted
- Issues

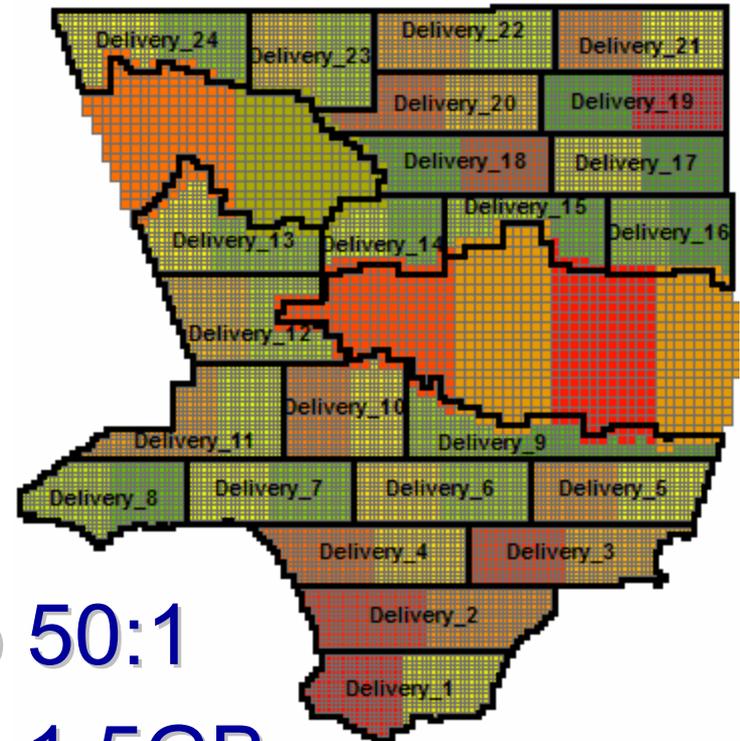
Pictometry Oblique Imagery

	Accuracy Statistic	N. View (feet)	S. View (feet)	E. View (feet)	W. View (feet)	Average all views
Horizontal Accuracy	RMSE _x	1.63	2.09	6.71	7.04	2.24 ft
	RMSE _y	6.15	5.36	2.05	1.84	1.86 ft
	RMSE _r	6.36	5.76	7.02	7.27	2.91 ft
	Accuracy _r 95% conf	11.02	9.96	12.14	12.59	5.04 ft
Vertical Accuracy	RMSE _z	1.37	1.10	1.20	2.29	1.26 ft
	Accuracy _z 95% conf	2.68	2.15	2.34	4.50	2.47 ft
Visible Targets		202	209	200	199	216

MrSID & ECW Mosaics

50 – 4-inch pixel mosaics

6 – 1-foot pixel mosaics



Target Compression Ratio 50:1

Average mosaic file size ~1.5GB



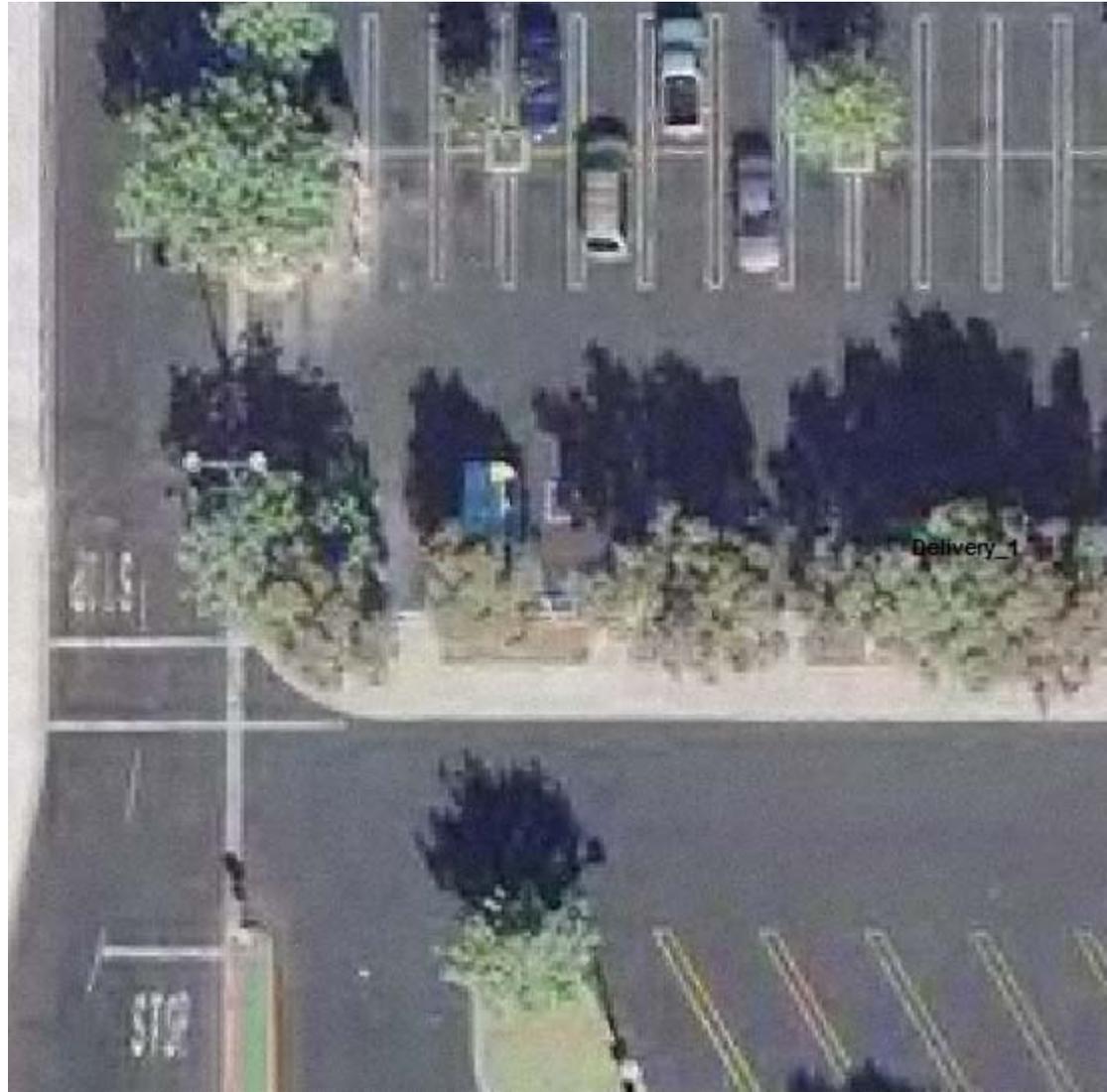
Final Product Deliver Status

- **National Forrest data product deliveries to SLDS participants** (Burbank, Glendale, La Canada-Flintridge, Monrovia, Palmdale, Pasadena, and Santa Clarita). **SHIPPED 4/6/2007**
- **Replacement data products in Areas 1 and 2 to SLDS participants** (Beaches & Harbor, Beverly Hills, Burbank, El Segundo, Glendale, Hermosa Beach, Inglewood, Long Beach, Manhattan Beach, Monrovia, Palmdale, Pasadena, Port of LA, Redondo Beach, Santa Clarita) **SHIPPED 4/13/2007**
- **LizardTech MrSID 50:1 Mosaics. SHIPPED 4/11/2007**
- **ER Mapper ECW 50:1 Mosaics. EXPECTED SHIPPING DATE 4/30/2007**

MrSID & ECW Mosaics (1"=100')



MrSID & ECW Mosaics (1"=25')



LESSONS LEARNED

Independent QA/QC

1. **Ortho Products - Conduct visual inspection of all Orthos.**
2. **Full ortho tiles, plus 1 tile overlap between 4-inch and 1-foot areas.**
3. **Elevation Products - Conduct visual inspection of DSM, DTM & DEM data.**
4. **Contour Products – Tighter specifications for contour generation (LiDAR surface filtering for DTM and more hard breakline requirements [roads & hydro], include manual cleanup / editing of final contours).**
5. **Pictometry Products – Visual Inspection not necessary!**
6. **Project Schedule – Establish a more formal Pilot Product delivery period, and build in extra “buffer-time” into the delivery schedule.**
7. **Product Deliveries – All deliveries on firewire drives to SLDS participants.**

HELPFUL HINTS

READ the LAR-IAC PRODUCT GUIDE!!!!!!

PRODUCT GUIDE

For the
Los Angeles Region
Imagery Acquisition Consortium
(LAR-IAC) Project
2006-07

LOS ANGELES • REGION
LAR|IAC
imagery acquisition consortium



Product Guide Developed by:



LOS ANGELES • REGION
LAR|IAC
imagery acquisition consortium



Dewberry

December 2006

Orthophotography Data Acquisition provided by:

Prime Contractor: Infotech Enterprises America, Inc. (formerly VARGIS)
Survey: ~~Stanlec~~
DMO Acquisition and Production: 3001 Inc.; GE Energy; Photo Science Inc.
LIDAR Acquisition and Production: Merrick & Company; Photo Science Inc.

Oblique Imagery Data and Viewer provided by:

Pictometry International Corp.

Quality Assurance, Quality Control and Deliverables provided by:

Dewberry and Davis (prime vendor)
Pinnacle Mapping Technologies, Inc.

Product Guide	
LAR-IAC Product Guide	
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HELPFUL HINTS

Helpful Software Tools

Global Mapper

<http://www.globalmapper.com/>

Adobe Photoshop

<http://www.adobe.com/>

GIMP (FREE GNU Image Manipulation Program)

<http://gimp.org>

listgeo.exe & geotifcp.exe (FREE GeoTIFF utility programs)

<http://www.remotesensing.org> <<<*links to lots of free stuff here*

<ftp://ftp.remotesensing.org/pub/geotiff/libgeotiff>

listgeo-geotifcp-win32-x86-112502.zip

Google (Google Earth)

<http://earth.google.com/>

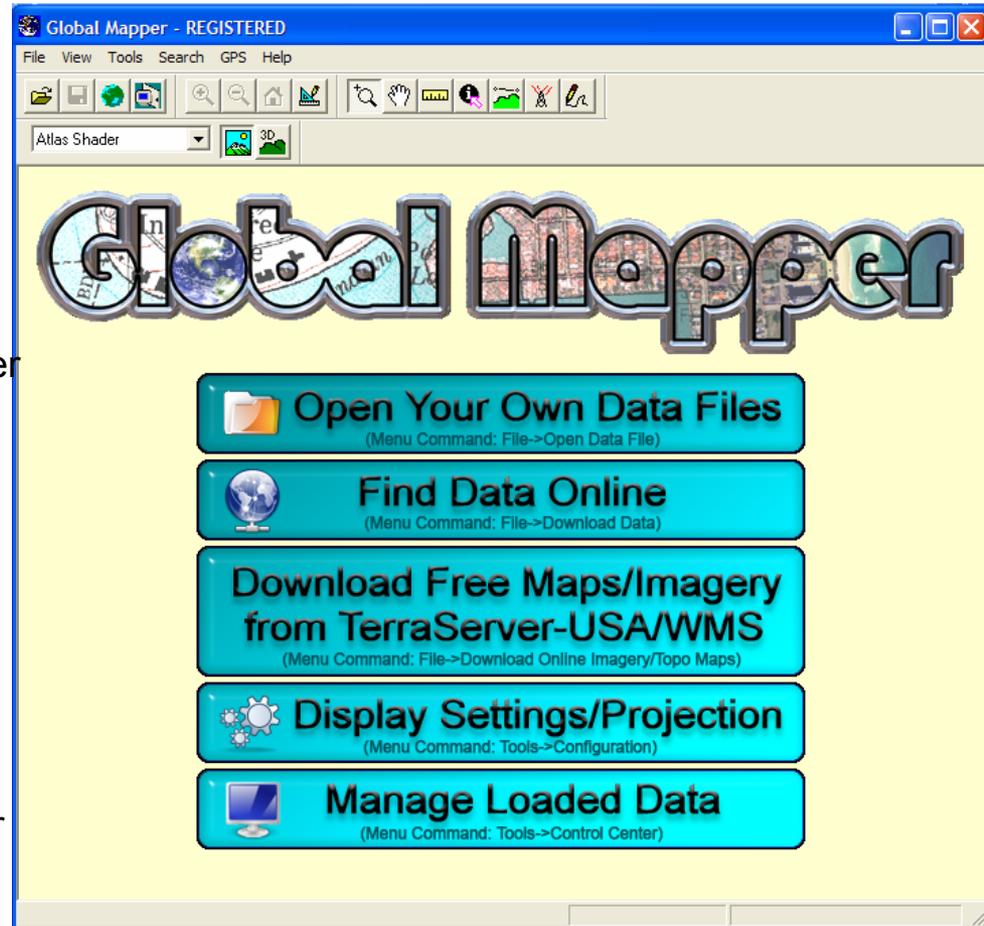
Microsoft MSN (Virtual Earth 3D)

<http://local.live.com/>

Global Mapper

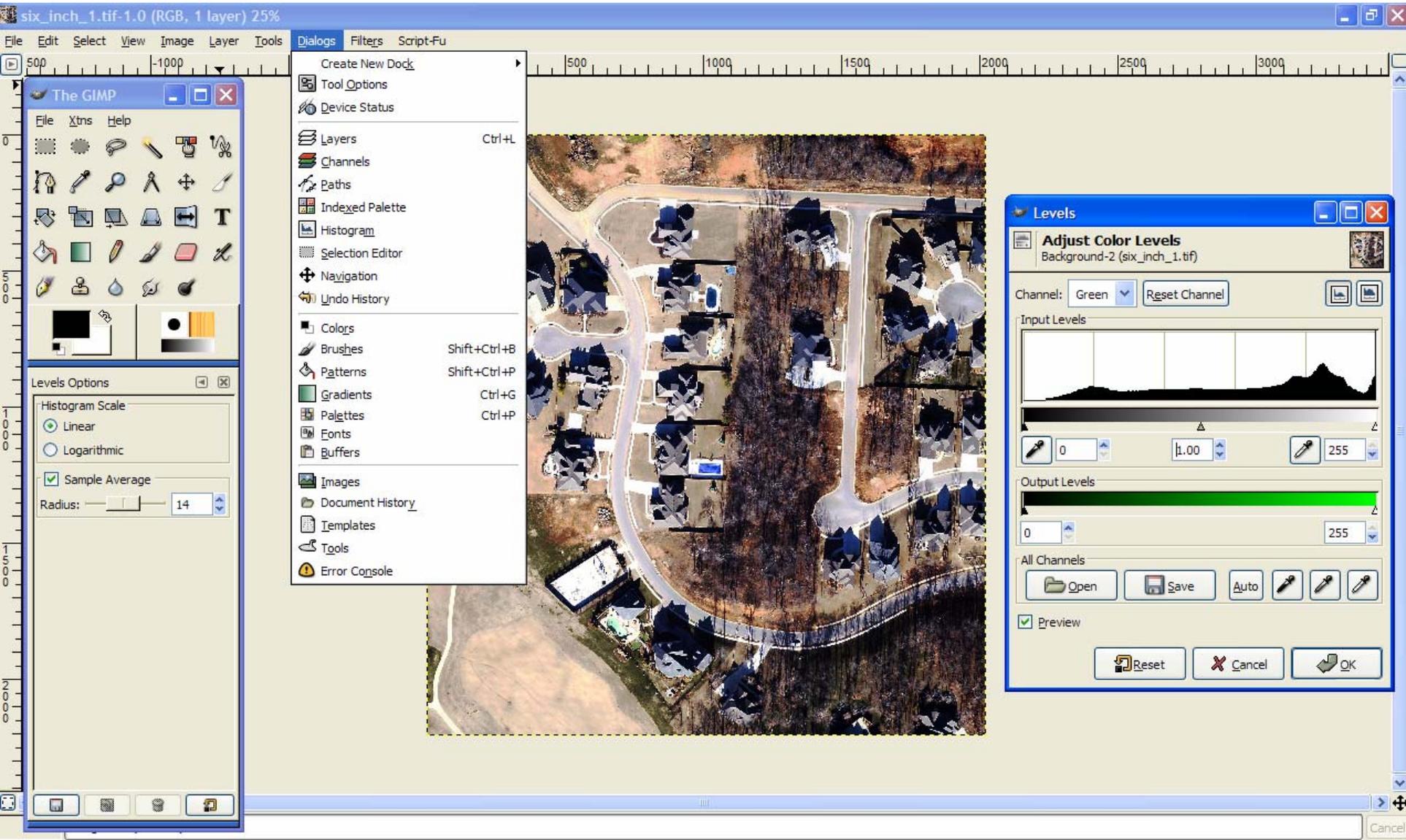
(Low Cost GIS Utility Program - \$279)

- Supports viewing of dozens of the most common data formats
- Batch conversion of almost any input data files to any compatible export type.
- 3D viewing of loaded elevation data including draping
- Merge data sets
- Crop, reproject, and merge any combination of raster data and elevation data
- Create contours from elevation data
- Digitize new vector (area, line, and point)
- GPS Support
- Projection/Datum Support
- Export both vector, raster, and elevation data to a variety of formats
- Graphically rectify (georeference) any JPG, TIFF, or PNG image
- Automatic triangulation and gridding of 3D point data sets
- 3D Path Profiling and Line of Sight (LOS) capabilities



GIMP

(FREE - GNU Image Manipulation Program)



listgeo.exe & geotifcp.exe (FREE - GeoTIFF Header Utility Programs)

```
C:\WINDOWS\system32\cmd.exe
X:\>listgeo
Usage: listgeo [-d] [-tfw] [-proj4] [-no_norm] [-t tabledir] filename

-d: report lat/long corners in decimal degrees instead of DMS.
-tfw: Generate a .tfw <ESRI TIFF World> file for the target file.
-proj4: Report PROJ.4 equivalent projection definition.
-no_norm: Don't report 'normalized' parameter values.
filename: Name of the GeoTIFF file to report on.

X:\>geotifcp
usage: gtiffcp [options] input... output
where options are:
-g file      install GeoTIFF metadata from <file>
-e file      install positioning info from ESRI Worldfile <file>
-a          append to output instead of overwriting
-o offset    set initial directory offset
-p contig    pack samples contiguously (e.g. RGBRGB...)
-p separate  store samples separately (e.g. RRR...GGG...BBB...)
-s          write output in strips
-t          write output in tiles
-i          ignore read errors
-d          truncate 8 bitspersample to 4bitspersample

-r #        make each strip have no more than # rows
```

```
6455_2116b.txt - Notepad
File Edit Format View Help
Geotiff_Information:
Version: 1
Key_Revision: 1.0
Tagged_Information:
ModelTiepointTag (2,3):
0 0 0
6455920 2121840 0
ModelPixelScaleTag (1,3):
0.33 0 0
End_Of_Tags.
Keyed_Information:
GTModelTypeGeoKey (Short,1): ModelTypeProjected
GTRasterTypeGeoKey (Short,1): RasterPixelisArea
GTCitationGeoKey (Ascii,263): "IMAGINE GeoTIFF Support\nc
ProjectedCSTypeGeoKey (Short,1): PCS_NAD83_California_5
PCSCitationGeoKey (Ascii,230): "IMAGINE GeoTIFF Support\nc
ProjLinearUnitsGeoKey (Short,1): Linear_Foot_US_survey
End_Of_Keys.
End_Of_Geotiff.

PCS = 26945 (name unknown)
Projection = 10435 ( )
GCS: 4269/NAD83
Datum: 6269/North American Datum 1983
Ellipsoid: 7019/GRS 1980 (6378137.00,6356752.31)
Prime Meridian: 8901/Greenwich (0.000000/ 0d 0' 0.00"E)
Projection Linear Units: 9003/(unknown) (1.000000m)

Corner Coordinates:
Upper Left (6455920.000,2121840.000)
Lower Left (6455920.000,2119200.000)
Upper Right (6458560.000,2121840.000)
Lower Right (6458560.000,2119200.000)
Center (6457240.000,2120520.000)
```

Batch command line Examples: (These examples assume that the .TIF and .TXT files are located in the current active directory, and that the location of the programs are in a directory defined in the current PATH).

listgeo.exe: Perform this step before Photoshop/GIMP processing. This step outputs all of the existing GeoTIFF header information for the .TIF files in the current directory to .TXT files in the same folder. Enter the following at the command prompt :

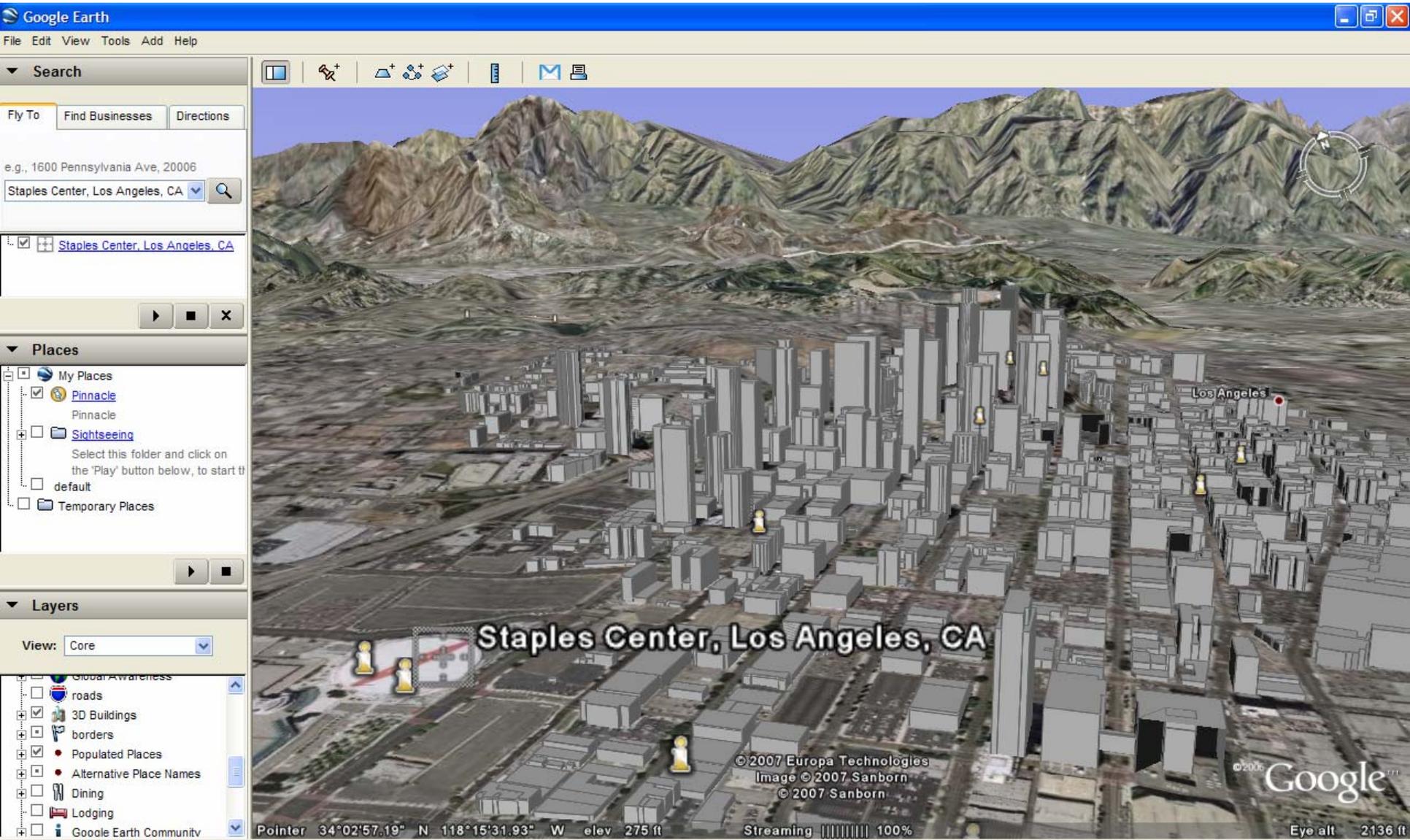
```
for %j in (*.TIF) do start /b /wait listgeo %j >%~nj.TXT
```

geotifcp.exe: Perform this step after Photoshop/GIMP processing. This step copies the GeoTIFF header information stored in the .TXT files (in the current directory) back into the .TIF files located in the same folder. Enter the following at the command prompt :

```
for %j in (*.TIF) do geotifcp -g %~nj.TXT %~nj.TIF %~nj.TIF
```

Google (Google Earth)

<http://earth.google.com/>



Microsoft MSN (Virtual Earth 3D)

<http://local.live.com/>

The screenshot displays the Microsoft Virtual Earth 3D interface. At the top, there is a navigation bar with the Live Search logo and a search input field. Below this, a menu bar includes options like Web, Images, News, Maps, Classifieds, and More. The main content area shows a 3D aerial view of a city with various buildings and terrain. A sidebar on the left contains map controls, including a zoom slider and a style selector (Road, Aerial, Hybrid). The bottom of the interface features copyright information and links for About, Help, and Feedback.

Live Search

Search for a business or category

Enter city, address, or landmark

Businesses People Maps

Web Images News **Maps** Classifieds More

Welcome Collections Driving directions Traffic Locate me Share Print

2D 3D

Road Aerial Hybrid

Microsoft Virtual Earth™

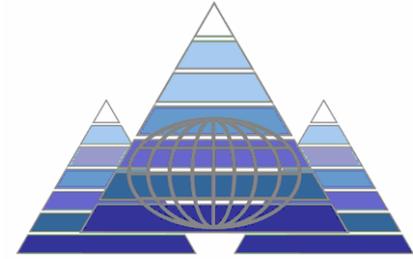
© 2007 Microsoft Corporation Privacy Code of Conduct Legal Trademarks Developers

© 2006 Microsoft Corporation © 2006 NAVTEQ © AND Image courtesy of USGS

About | Help | Feedback



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Independent QA/QC
Contract

Q&A